

detecting impedance; and
creating the volumetric ablation in the selected tissue mass.

37. (Amended) The method of claim 36, wherein 5 to 100 watts of electromagnetic energy source is delivered to the plurality of antennas without impeding out an antenna of the plurality of antennas.

38. (Amended) The method of claim 36, wherein 5 to 75 watts of electromagnetic energy [source] is delivered to the plurality of antennas without impeding out an antenna of the plurality of antennas.

39. (Amended) The method of claim 36, wherein 5 to 50 watts of electromagnetic energy [source] is delivered to the plurality of antennas without impeding out an antenna of the plurality of antennas.

REMARKS

Objections to the Drawings

The Examiner has objected to the drawings under 37 CFR §1.83(a) and states that the rigid antenna advancement member must be shown or the feature canceled from the claims. Office action mailed 11/17/99, page 2, paragraph 2.

Figure 1(b) has been added to overcome this ground of rejection. Figure 1(b) is disclosed in S.N. 08/290,031, which is incorporated in S.N. 08/513,379 which in turn is incorporated by reference in the present application.

Rejections under 35 U.S.C. §112

Claims 1-44 are rejected under 35 U.S.C. §112, first paragraph, as containing subject matter not described in the specification in such a way as to reasonably convey to one skilled in the relevant art at the inventors, at the time the application was filed, had possession of the claimed invention. Specifically, the examiner indicates that there is no description in the specification of a rigid advancement, particularly one that simultaneously advances the antennas from the trocar. Office action mailed 11/17/99 page 2, paragraphs 3-4.

Applicants' have included new Figure 1(b) to overcome this ground of rejection.

Claims 16-18, 33-35 and 37-39 stand rejected under §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention. The examiner state that claims 16-18 and 33-35 since there is insufficient means recited in the claims, applicant must either positively recite the energy source, or amend the language of the rejected claims to indicate that the device is "adapted" to operate in a bipolar or monopolar mode.

The examiner states that the language "electromagnetic energy source to the plurality of antennas" is unclear in claims 37-39. Office action mailed 11/17/99, page 3, paragraphs 1-3. Applicant has amended claims 37-39 to change "source" to "is delivered".

Rejections under 35 U.S.C. §103

Claims 1-12 and 15-44 stand rejected under §103(a) as obvious over LeVeen, et al. in view of Edwards, et al. The Examiner states that the only feature not expressly taught by LeVeen et al is the energy delivery surface size, and goes on to state that the examiner can see no reason why the LeVeen, et al device would "impede out". More specifically, the examiner states there is no specific disclosure in applicant's specification of the particular size of the energy delivery surface which prevents this "impeding out" of the electrodes; and moreover, it appears one of ordinary skill in the art would be capable of creating the proper energy surface area to prevent impeding out an antenna without undue experimentation. The Examiner also maintains that that while LeVeen et al fails to disclose the specific size of the trocar in its specification, use of any well known trocar size would have been an obvious design consideration dependent upon the particular procedure as well as the particular antenna device being used.

With regard to Edwards, et al, the Examiner states that impedance monitoring and feedback means are generally well known in the art; that Edwards et al also disclose the use of temperature sensors located on the electrodes and the sheath as well as a means to provide a fluid to tissue.

With respect to the newly added limitation of a rigid antenna advancement member, the examiner maintains that there is insufficient disclosure of such an advancement member in applicant's specification, and moreover, while LeVeen et al. disclose a "cable", the examiner maintains that a cable may be rigid, even if it is capable of being bent.

Finally, Edwards et al. disclose the use of a rigid advancement mechanism, and providing the LeVeen et al. device with a rigid handle and advancement means to simultaneously advance the antennas is deemed an obvious modification to one skilled in the art.

The examiner states that to have provided the LeVeen et al device with an impedance monitoring and control means to control the delivery of energy to the electrodes to avoid "impeding out" the electrodes would have been an obvious modification for one of ordinary skill in the art in view of the teaching of Edwards et al, and that it would have been an obvious design consideration for one of ordinary skill in the art to have provided the LeVeen et al device with a rigid advancement member to extend the antennas, particularly since Edwards et al use a rigid handle and advancement means to extend the RF antennas. Office action dated 11/17/99, page 3, paragraph 4 to page 6.

These grounds of rejection are respectively traversed.

Claim 1, as now amended, is an ablation treatment apparatus with a trocar including a tissue piercing distal end and a hollow lumen extending along a longitudinal axis of the trocar. A multiple

antenna ablation device configured to be coupled to an electromagnetic energy source. The multiple antenna ablation device includes three or more antennas positionable in the lumen that are deployable from the trocar lumen with curvature in a lateral direction relative to the longitudinal axis at a selected tissue mass. Each deployed antenna has an electromagnetic energy delivery surface size sufficient to create a volumetric ablation between the deployed antennas without impeding out a deployed antenna when 5 to 200 watts of electromagnetic energy is delivered from the electromagnetic energy source to the multiple antenna ablation device. An impedance monitor device is coupled to the multiple antenna ablation device. An antenna advancement member is coupled to the three antennas. The antenna advancement member is sufficiently rigid to move in a linear direction along the longitudinal axis of the trocar and simultaneously advance the three or more antennas from the trocar. A cable is coupled to the multiple antenna ablation device.

LeVeen, et al., fail to suggest or teach an impedance monitor, an antenna advancement member that is sufficiently rigid to move in a linear direction along the longitudinal axis of the trocar when the antenna are simultaneously advanced from the trocar and that the deployed antenna have an electromagnetic energy delivery surface of sufficient size that does not impede out when 5 to 200 watts of energy is delivered to the antenna. Edwards, et al., fails to disclose antenna that are deployed with curvature and energy delivery surfaces of sufficient size that do not impede out when 5 to 200 watts of energy is delivered to the antenna. It would not be obvious to combine the teachings of LeVeen, et al., with Edwards, et al., to reach claim 1 of the present invention.

CONCLUSION

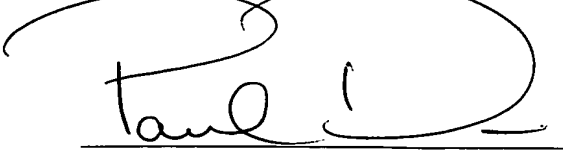
It is submitted that the present application is now in form for allowance, and such action is respectfully requested.

The Commissioner is authorized to charge any additional fees which may be required, including petition fees and extension of time fees, to Deposit Account No. 23-2415 (Docket No. 13724-787). A duplicate copy of this paper is enclosed.

Respectfully submitted,

~~WILSON SONSINI GOODRICH & ROSATI~~

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